

Appl. No. 10/823,101
Amdt. Dated January 24, 2006
Reply to Office Action of December 9, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1 (previously presented) A hinge device for pivotally coupling a display to a base of an electronic device, the hinge device comprising:

a seat for being secured with the base, the seat defining a hole therein, and an inner wall of the seat defining a railway therein;

a rotor comprising a shaft pivotally received in the hole of the seat, and a pair of beams;

a pair of hinges, each of the hinges comprising a first rotating member for being attached to a respective one of the beams of the rotor, and a second rotating member pivotally engaged with the first rotating member for being attached to the display; and

at least one roller located on the rotor and movably received in the railway of the seat;

wherein the railway defines at least two points thereon located in two different planes perpendicular to an axial direction of the shaft, and when the shaft of the rotor rotates in the hole of the seat, the at least one roller moves along the railway to cause the rotor to move in said axial direction of the shaft.

Claim 2 (canceled)

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Claim 3 (previously presented): The hinge device as described in claim 1, wherein the seat defines a locating hole therethrough, the locating hole engagingly receives a locator, the locator comprises a cup, a spring and a ball, one end of the spring abuts against an inside bottom of the cup, and another end of the spring abuts against the ball.

Claim 4 (previously presented): The hinge device as described in claim 3, wherein the locator is threadingly engaged in the locating hole.

Claim 5 (previously presented): The hinge device as described in claim 3, wherein an outer wall of the shaft of the rotor defines a plurality of parallel flutes parallel to said axial direction of the shaft, and the ball of the locator engages in respective flutes to locate the rotor in discrete positions as the rotor is rotated in the seat.

Claim 6 (original): The hinge device as described in claim 5, wherein the shaft defines at least one socket accommodating the at least one roller.

Claim 7 (canceled)

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Claim 8 (previously presented): The hinge device as described in claim 1, wherein the railway has a generally sinusoidal path and traces two complete cycles.

Claim 9 (canceled)

Claim 10 (previously presented): The hinge device as described in claim 8, wherein the seat further defines a vertical guide channel in an inner wall thereof in communication with the railway for facilitating entry of the at least one roller into the railway.

Claim 11 (currently amended): A hinge device assembly comprising:

a base;

a display; and

a hinge device coupling the display to the base, the hinge device comprising:

a pair of first hinges each comprising a first rotating member and a second rotating member pivotally engaging with the first rotating member around a first axis, the second rotating member being secured to the display; and

a second hinge comprising a seat engaged with the base and a rotor engaged with the first rotating member, the seat pivotally engaged with the rotor around a second axis, the seat defining a railway in an inner wall thereof, the rotor defines at least one socket in an outer wall thereof accommodating at least one

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roller, the at least one roller being tightly and movably held
between the socket and the railway;

wherein the display is rotatable around both said first axis and said second axis, and when the display rotates around said second axis, the display is driven to move along said second axis due to a movement of the rotor together with a movement of the at least one roller along the railway.

Claim 12 (original): The hinge device assembly as described in claim 11, wherein the seat defines a central through hole therein and the rotor comprises a shaft rotatably received in the through hole.

Claim 13 (original): The hinge device assembly as described in claim 12, wherein the seat comprises a block extending from an outer circumferential wall thereof, a locating hole is defined through the seat and the block, and a locator is received in the locating hole.

Claim 14 (original): The hinge device assembly as described in claim 13, wherein the locator comprises a cup, a spring and a ball, the spring abuts against an inside bottom of the cup, the ball abuts against an outmost end of spring, and the shaft of rotor defines a plurality of vertical parallel flutes in an outer wall thereof, the ball of the locator engaging in respective flutes to locate the rotor during rotation of the rotor in the seat.

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Claim 15 (original): The hinge device assembly as described in claim 14, wherein the locating hole is threaded, and the cup has an outer thread.

Claim 16 (canceled)

Claim 17 (canceled)

Claim 18 (previously presented): The hinge device assembly as described in claim 11, wherein the railway has a generally sinusoidal path and traces two complete cycles.

Claim 19 (previously presented): The hinge device assembly as described in claim 11, wherein a vertical guide channel is defined in the inner wall of the seat in communication with the railway.

Claim 20 (previously presented): A hinge device assembly comprising:
a base;
a display pivotably coupled to the base;
a seat coupled to one of the base and the display, the seat defining a first engagement device defining a vertical axis and a first guiding device; and
a rotor coupled to the other of the base and the display, the rotor comprising a second engagement device defined thereon and

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engaged with said first engagement device, and a second guiding device guidably engaged with the first guiding device; wherein the rotor is rotatable relative to the seat about said vertical axis under a condition that during rotation said rotor is forced to move up and down along said vertical axis due to engagement between the first and second guiding devices, one of the first guiding device and the second guiding device defines a guiding path thereon, at least two points on said guiding path projecting on said vertical axis to define two different points so as not to have the base and the display interfere with each other, and one of said first engagement device and said second engagement device defines a plurality of flutes thereat surrounding said vertical axis to position the other of said first engagement device and said second engagement device in a selected one of the flutes.

Claim 21 (canceled)

Claim 22 (previously presented): The hinge device assembly as described in claim 20, wherein the rotor reaches a greatest height when the rotor rotates 90 degrees from a lowest point of the guiding path.

Claim 23 (previously presented): The hinge device assembly as described in claim 22, wherein a flattened shape of the guiding path is sinusoidal and traces two cycles.

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Claim 24 (previously presented): The hinge device assembly as described in claim 20, wherein one of the seat and the rotor defines a guiding channel parallel to said vertical axis, and the guiding channel communicates with the guiding path for positioning of a roller into the guiding path via the guiding channel.

Claim 25 (previously presented): The hinge device assembly as described in claim 20, wherein one of said first engagement device and said second engagement device comprises a ball and a spring extending from one side of the ball, the ball thereby resiliently engaging with the other of said first engagement device and said second engagement device.

Claim 26 (previously presented): The hinge device assembly as described in claim 20, wherein one of the seat and the rotor is coupled to a respective one of the base and the display via a hinge, and a portion of the hinge is rotatable with respect to another portion of the hinge around a horizontal axis perpendicular to said vertical axis.